DOI: https://doi.org/10.54393/pjhs.v5i09.1713

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (P): 2790-9352, (E): 2790-9344
Volume 5, Issue 9 (September 2024)

Original Article

OPEN ACCESS

Demographic and Clinical Features of Allergic Rhinitis Presenting at a Postgraduate Teaching Hospital

Tahir Hussain Khan[1*], Muhammad Jamil Memon[2], Tariq Zia Siddique[3], Ashfaq Hussain Rana[4], Muhammad Omer Khan Balouch[5] and Muhammad Afzal[4]

[1]Department of Ear, Nose and Throat, Kulsumbai Valik Site Teaching Hospital, Karachi, Pakistan
[2]Department of Ear, Nose and Throat, Ziauddin Hospital Clifton, Karachi, Pakistan
[3]Department of Ear, Nose and Throat, Hamdard University Hospital, Karachi, Pakistan
[4]Department of Ear, Nose and Throat, Shahida Islam Medical College, Lodhran, Pakistan
[5]Department of Ear, Nose and Throat, Quaid-e-Azam Medical College, Bahawalpur, Pakistan

ARTICLE INFO

Keywords:
Allergic Rhinitis, Clinical Features, Demographics Pattern, Nasal Itching

How to Cite:
Khan, T. H., Memon, M. J., Siddiqui, T. Z., Rana, A. H., Balouch, M. O. K., & Afzal, M. (2024). Demographic and Clinical Features of Allergic Rhinitis Presenting at a Postgraduate Teaching Hospital: Demographic and Clinical Features of Allergic Rhinitis. Pakistan Journal of Health Sciences (Lahore), 5(09), 21-25. https://doi.org/10.54393/pjhs.v5i09.1713

***Corresponding Author:**
Tahir Hussain Khan
Department of Ear, Nose and Throat, Kulsumbai Valik Site Teaching Hospital, Karachi, Pakistan
tahirhussainkhan99@gmail.com

Received Date: 19th May, 2024
Acceptance Date: 19th September, 2024
Published Date: 30th September, 2024

ABSTRACT

Allergic rhinitis is a common disorder that affects millions worldwide and it represents a global concern. **Objective:** To determine the frequency of clinical variables, and demographic pattern of the allergic rhinitis patients in the otorhinolaryngology outpatient department in a Teaching Hospital. **Methods:** This cross-sectional study was conducted at the Department of Ear, Nose, and Throat of Kulsumbai Valik Site Postgraduate Teaching Hospital Karachi from 1st July 2022 to 31st December 2023. The study comprised allergic rhinitis patients. A total of 750 patients were included in this study after diagnosing allergic Rhinitis mentioned on their prescription. Data were collected properly on a predesigned questionnaire. Variables included age, gender, socioeconomic status, residence, sneezing, itching in the eye and nose, rhinorrhea, nasal discharge, bluish pale nasal mucosa (Nasal Congestion), edematous turbinate, and headache. Data were entered in SPSS software version 23.0 and analyzed. **Results:** The mean age of patients were 39 ± 13 years. Male were reported 447 (59.6%) and female patients were 303 (40.4%). 390 (52%) patients have resided in Industrial areas while 360 (48%) patients were in city areas. The most common symptom was nasal itching 522 (69.6%) followed by rhinorrhea 492 (65%) and nasal discharge 465(62%). **Conclusions:** It was concluded that allergic rhinitis patients presenting at the ENT outpatient department showed that males were commonly affected with the productive age group 59% of males suffered from Allergic Rhinitis. The most frequent and common symptom was nasal itching (69.6%) followed by rhinorrhea (65%) and nasal discharge(62%).

INTRODUCTION

Allergic Rhinitis (AR), sometimes referred to as Hay fever, is an inflammatory nasal illness caused by an allergic reaction to airborne allergens [1]. Allergic rhinitis (AR) is defined as an Ig E-mediated inflammatory reaction of the lining epithelium of the nose due to allergens [2]. The symptoms of this ailment include runny nose, itching, nasal congestion, and sneezing. People of all ages are affected by allergic rhinitis, which is one of the most common chronic respiratory illnesses in the world. Allergens that trigger an immune response are the primary cause of allergic rhinitis. Among the allergens that are commonly encountered include grass, weed, and tree pollen, dust mites, mold spores, and pet dander. Allergic rhinitis (AR) is a very common disorder that affects 400 million patients in the world. As its prevalence has increased but still it is usually undiagnosed. Severe allergic rhinitis rate is high in Africa and Latin America [3]. The rate of incidence of allergic rhinitis (AR) in children above 5 years was reported up to 17.2%. The peak age is between 24-29 months for the diagnosis (2.5%) [4]. The symptoms of allergic rhinitis can vary in intensity and include a runny nose, watery eyes, runny nose, itching of the nose, throat, or eyes. These

DOI: https://doi.org/10.54393/pjhs.v5i09.1713

symptoms may make it difficult to go about everyday activities and have a major negative influence on quality of life [5]. There are two types of allergic rhinitis: seasonal and permanent. Seasonal allergic rhinitis usually happens at certain seasons of the year when certain allergens, such as pollen, are more common. Conversely, mold, dust mites, and pet dander are common indoor allergens that cause perennial allergic rhinitis, which lasts all year. Non-pharmacological and pharmaceutical techniques are also possible to reduce symptoms of allergic rhinitis. One non-pharmacological strategy is to avoid allergens by utilizing air purifiers or staying indoors during seasons with high pollen counts. In severe instances, pharmacological alternatives include immunotherapy, nasal corticosteroids, decongestants, and antihistamines [6, 7]. Intranasal corticosteroid nasal spray is the first-line treatment for controlling the symptoms of allergic rhinitis [8]. Allergic rhinitis is a common disorder and affects up to 40%. In the past people considered Allergic rhinitis to be a localized disease of the nasal mucosa and nasal passages but now it is a component of airway disease and involved in the entire respiratory mucous membrane [9]. Allergic rhinitis imposes a heavy burden on the general population and produces a significant financial impact [10]. Surgery is typically regarded as a treatment option for allergic rhinitis when more conservative approaches and medicines are unable to relieve symptoms or when structural problems with the nasal passages are a contributing factor to symptoms. It's crucial to remember that surgical procedures are usually saved for particular circumstances and are not the primary line of therapy for allergic rhinitis. The following surgical procedures can be used to treat allergic rhinitis: including, Septoplasty, Turbinate Reduction, Sinus Surgery (ESS), Nasal Polypectomy and Laser Surgery [11]. It's crucial to note that surgery is not a cure for allergic rhinitis, and it may not eliminate the underlying allergic response. Allergic rhinitis is a chronic condition, and surgical interventions are typically reserved for specific cases where structural abnormalities or complications contribute to symptoms. While it might be difficult to completely avoid allergic rhinitis, there are steps you can take to lessen your exposure to allergens and manage your symptoms. These include utilizing air purifiers, keeping one's home tidy, and adhering to treatment regimens as directed [9, 10]. Probiotics are used nowadays for the treatment of allergic rhinitis and this may be beneficial, particularly for Bifidobacterium spp [12].

The study aimed to determine the clinical picture, demographic pattern and complications of allergic rhinitis in patients attending the otorhinolaryngology (ORL) outpatient department in a postgraduate teaching hospital.

METHODS

This was a cross-sectional study, conducted in the outpatient of the Department of Ear, Nose, and Throat (ENT) of Kulsumbai Valika Postgraduate Teaching Hospital Karachi from 1st July 2022 to 31st December 2023, after obtaining ethical approval from IRB (reference No. IRB/81/2022) and written consent was also taken from all participants for this study. The study subjects comprised patients with allergic rhinitis diagnosed by the consultant ENT specialist. All patients were advised for serum Ig-E for confirmation of diagnoses. Those patients who had raised serum Ig-E levels along with sneezing, rhinorrhea, and itching in eyes and nose were labelled as patients of "Allergic Rhinitis". A convenient sampling technique was used. The sample size was calculated by taking an expected proportion of allergic rhinitis as 48% [16], with 1% absolute precision and 95% Confidence Interval. After calculation sample size came 739 which was further enhanced to 750 for better precision and accuracy. A total of 750 patients of both genders were included randomly in the study with age ranges from 13 to 70 years who were identified with "Allergic rhinitis" and willing to participate in the study. Patients having Allergic fungal rhino sinusitis, Atrophic rhinitis, Vasomotor rhinitis, a history of nasal trauma, and a history of previous nasal surgeries were excluded from this study. Data were collected on a predesigned questionnaire. Demographic variables included age, gender, socioeconomic status, residence (Industrial area/City area), sneezing, itching in the eye and itching in the nose, rhinorrhea, nasal discharge, bluish pale nasal mucosa(nasal congestion), edematous turbinate and headache. Data were entered and analyzed by using SPSS software version 23.0. Quantitative variables like age were presented as mean and standard deviation. Categorical data were presented as percentages such as gender, socioeconomic status, and clinical features of allergic rhinitis.

RESULTS

This study included 750 study subjects having Allergic Rhinitis. The mean age of the study subjects was 39 ± 13 years, and the most common age group was 16 to 30 years. The most common symptom was nasal itching 522 (69.6%), followed by rhinorrhea 492 (65%) and nasal discharge 465 (62%). 303 (40.4%) patients were female and 447 (59.6%) were male i.e. male patients were more predominant (Figure 1).

DOI: https://doi.org/10.54393/pjhs.v5i09.1713

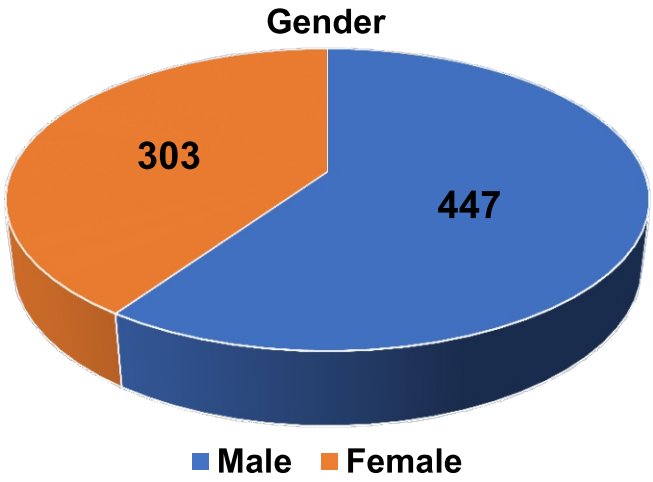

Figure 1: Gender Distribution in 750 Patients

The most common age group was 16-30 years and 220 (29.33%) patients were involved. In the study, 390 (52%) patients resided in the Industrial area, and 360 (48%) resided in the city area. Regarding socioeconomic status 650 (86.67%) were poor (Table 1).

Table 1: Demographic Characteristics of the Study Population

Variable	Frequency (%)
Age Groups	
Less than 16	111 (14.8%)
Between 16-30 Years	220 (29.33%)
Between 31-45 Years	110 (14.67%)
Between 46-60 Years	279 (37.2%)
Above 60 Years	30 (4%)
Residence	
Industrial Area	390 (52%)
City Area	360 (48%)
Socio Economic Status	
Poor	650 (86.67%)
Middle Class	100 (13.3%)

In the study, the clinical features of Allergic Rhinitis were analyzed. The total number of patients was 750. In nasal itching, 522 (69.6%) patients were recorded. For rhinorrhea, 492 (65.6%) patients were analyzed (Table 2).

Table 2: Clinical Features of Allergic Rhinitis (N=750)

Clinical Features	Frequency (%)
Nasal Itching	522 (69.6%)
Rhinorrhea	492 (65.6%)
Nasal Discharge	465 (62%)
Sneezing	387 (51.6%)
Bluish Pale Nasal Mucosa (Nasal Congestion)	294 (39.2%)
Headache	87 (11.6%)
Edematous Nasal Turbinate	72 (9.6%)
Eye Itching	66 (8.8%)

DISCUSSION

Allergic rhinitis is a response of the immune system to an allergen. Sneezing, itching and rhinorrhea are examples of allergic symptoms due to the release of these chemical substances. Subsequently, immune i.e. neutrophils, eosinophils and basophils penetrate the nasal mucosa, and their released chemical mediators trigger the inflammatory process. Thus, mast cells create the first response, which is then carried on by other inflammatory cells [13]. In current study, 750 patients had allergic rhinitis and the most common age group was 16-30 years, in which 220 patients were there i.e. 29.3%. Male patients were found more i.e. 447 (59.6%) patients while female patients were 303 (40.4%). Among study subjects, 390 (52%) patients resided in industrial areas, and 360 (48%) patients were from city areas. Regarding socioeconomic status 650 (86.67%) patients were poor and 100 (13.3%) patients belonged to the middle class. The most common symptom was nasal itching 522 (69.6%), followed by rhinorrhea 492 (65.6%) and nasal discharge 465 (62%). These findings are comparable to earlier research studies [14]. In a study, Appiah *et al.*, reported that in a hospital's ENT clinic, 10% of patients have allergic rhinitis and it was most prevalent in the 19–35-year-old age group. Compared to people living in the rural areas versus city areas, people in the city area experienced allergic rhinitis more. Sneezing was the primary complaint, while dust mites and sinusitis were the most prevalent comorbid conditions and triggers for allergic rhinitis, respectively. Male patients were 42% and female patients were 58%. The majority of them resided in city areas (67%). The majority 52% were between the ages of 19-35 years and the leading symptom was sneezing i.e. 25%, rhinorrhea 21%, headache 8% and nasal congestion 4% [14]. Ranjana *et al.*, reported that allergic rhinitis may affect all ages of patients and among them, 80% of patients were ≤20 years. female patients suffered more from allergic rhinitis as compared with male patients. Sneezing was 71.2%, nasal congestion was 51.9%, headache was 44.2%, rhinorrhea was 44.2% and nasal itching was 25.5% [15]. In a study in 2018, Adegbiji *et al.*, reported that 63% of patients were male and 37% were female. Among them, 42.3% were living in city areas. Sneezing was 58.5%, nasal congestion was 75.8%, itching in the nose was 53.22%, itching in the eye was 32.5%, edematous nasal mucosa was72.8%, turbinate enlargement was 67.2% and the headache was 52.8% in the study population [16]. In another study, Nur *et al.*, reported that the incidence of allergic rhinitis in children was 17.2% for the first 5 years of their life and 80% of allergic rhinitis symptoms develop, under the age of 20 years [17]. In a study, Zhang *et al.*, reported that the most common symptom in allergic rhinitis was sneezing i.e. 81.8%, rhinorrhea was 60.2% and nasal itching was 49.6%, nasal congestion was 54.9% and itching in eyes was 42.9% [18]. Kef K *et al.*, reported in a study that the mean age of patients was 20.71 ± 3.12 years and among them, 42.88% of patients were male and 57.12% of patients were female. The common symptom was

DOI: https://doi.org/10.54393/pjhs.v5i09.1713

sneezing i.e. 18.9%, nasal congestion 17.14%, itching in the nose 13.2%, Rhinorrhea 14.35%, itching in the eyes 11.24% and socioeconomic status showed 20.19% poor and 13.95% patients belonged to the middle class and p<0.053 which was significant [19]. In a study Ologe *et al.*, was reported that the mean age of patients was 38.5 ± 16.3 years and the most common symptom was sneezing i.e. 93% in allergic rhinitis patients and the p-value was <0.001[20].

CONCLUSIONS

It was concluded that allergic rhinitis is a common disease presenting at the outpatient Ear, Nose and Throat Department of a Postgraduate Teaching Hospital. This study showed that males were affected more as compared with females in the productive age group. The most frequent and common symptom was nasal itching followed by rhinorrhea and nasal discharge.

Authors Contribution

Conceptualization: THK
Methodology: MJM, TZS, MOKB
Formal analysis: AHR
Writing review and editing: MA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Scadding GK. Optimal management of allergic rhinitis. Archives of Disease in Childhood. 2015 Jun; 100(6): 576-82. doi: 10.1136/archdischild-2014-306300.

[2] Siddiqui MI, Dhanani R, Moiz H. Prevalence of allergic rhinitis among healthcare workers and its impact on their work: A cross-sectional survey at a tertiary healthcare centre in Pakistan. JPMA. The Journal of the Pakistan Medical Association. 2020 Oct; 70(8): 1432. doi: 10.5455/JPMA.17588.

[3] Pawankar R. Allergic diseases and asthma: a global public health concern and a call to action. World Allergy Organization Journal. 2014 Dec; 7: 1-3. doi: 10.1186/1939-4551-7-12.

[4] Hill DA, Grundmeier RW, Ram G, Spergel JM. The epidemiologic characteristics of healthcare provider-diagnosed eczema, asthma, allergic rhinitis, and food allergy in children: a retrospective cohort study. BMC Pediatrics. 2016 Dec; 16: 1-8. doi: 10.1186/s12887-016-0673-z.

[5] Tenero L, Vaia R, Ferrante G, Maule M, Venditto L, Piacentini G *et al.* Diagnosis and management of allergic rhinitis in asthmatic children. Journal of Asthma and Allergy. 2023 Dec; 16(2023): 45-57. doi: 10.2147/JAA.S281439.

[6] Iordache A, Balica NC, Horhat ID, Morar R, Tischer AA, Milcu AI *et al.* A Review Regarding the Connections between Allergic Rhinitis and Asthma-Epidemiology, Diagnosis and Treatment. Current Health Sciences Journal. 2023 Jan; 49(1): 5. doi: 10.31655/2307-3373-2023-3-49-57.

[7] Izmailovich M, Semenova Y, Abdushukurova G, Mukhamejanova A, Dyussupova A, Faizova R *et al.* Molecular aspects of allergen-specific immunotherapy in patients with seasonal allergic rhinitis. Cells. 2023 Jan; 12(3): 383. doi: 10.3390/cells12030383.

[8] Campo P and Canonica GW. Local allergic rhinitis. The Journal of Allergy and Clinical Immunology: In Practice. 2024 Jun; 12(6): 1430-3. doi: 10.1016/j.jaip.2024.04.021.

[9] Small P, Keith PK, Kim H. Allergic rhinitis. Allergy, Asthma & Clinical Immunology. 2018 Sep; 14: 1-1. doi: 10.1186/s13223-018-0280-7.

[10] Zhang Y, Lan F, Zhang L. Advances and highlights in allergic rhinitis. Allergy. 2021 Nov; 76(11): 3383-9. doi: 10.1111/all.15044.

[11] Contoli M, Porsbjerg C, Buchs S, Larsen JR, Freemantle N, Fritzsching B. Real-world, long-term effectiveness of allergy immunotherapy in allergic rhinitis: subgroup analyses of the REACT study. Journal of Allergy and Clinical Immunology. 2023 Aug; 152(2): 445-52. doi: 10.1016/j.jaci.2023.02.024.

[12] Kappen J, Diamant Z, Agache I, Bonini M, Bousquet J, Canonica GW *et al.* Standardization of clinical outcomes used in allergen immunotherapy in allergic asthma: An EAACI position paper. Allergy. 2023 Nov; 78(11): 2835-50. doi: 10.1111/all.15817.

[13] Licari A, Magri P, De Silvestri A, Giannetti A, Indolfi C, Mori F *et al.* Epidemiology of allergic rhinitis in children: a systematic review and meta-analysis. The Journal of Allergy and Clinical Immunology: In Practice. 2023 Aug; 11(8): 2547-56. doi: 10.1016/j.jaip.2023.05.016.

[14] Appiah-Thompson P and Amuquandoh A. Prevalence and Socioeconomic Impact of Allergic Rhinitis Among Ear, Nose, and Throat Patients of a Tertiary Hospital. Cureus. 2023 Dec; 15(12). doi: 10.7759/cureus.49768.

[15] Ranjana K and Maheshwari M. Analysis of common allergens affecting patients with allergic rhinitis. Bioinformation. 2023 Jan; 19(1): 24. doi: 10.6026/97320630019024.

DOI: https://doi.org/10.54393/pjhs.v5i09.1713

[16] Adegbiji WA, Olajide GT, Olajuyin AO, Aremu SK, Olusola AG. Pattern of allergic rhinitis among children in Ekiti, Nigeria. International Journal of Pediatric Otorhinolaryngology. 2018 Mar; 106: 75-9. doi: 10.1016/j.ijporl.2018.01.014.

[17] Nur Husna SM, Tan HT, Md Shukri N, Mohd Ashari NS, Wong KK. Allergic rhinitis: a clinical and pathophysiological overview. Frontiers in Medicine. 2022 Apr; 9: 874114. doi: 10.3389/fmed.2022.874114.

[18] Zhang Y and Zhang L. Prevalence of allergic rhinitis in China. Allergy, Asthma & Immunology research. 2014 Mar; 6(2): 105-13. doi: 10.4168/aair.2014.6.2.105.

[19] Kef K and Güven S. The prevalence of allergic rhinitis and associated risk factors among university students in Anatolia. Journal of Asthma and Allergy. 2020 Nov; 13(1): 589-97. doi: 10.2147/JAA.S279916.

[20] Ologe FE, Adebola SO, Dunmade AD, Adeniji KA, Oyejola BA. Symptom score for allergic rhinitis. Otolaryngology—Head and Neck Surgery. 2013 Apr; 148(4): 557-63. doi: 10.1177/0194599813477605.